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ORIGINAL ARTICLE

Are workers in the cultural industries paid differently?

Wage differentials between three sub-industries of the cultural industries and their respective main industry: The case of the Netherlands

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Abstract This article aims to explore wage differentials between employees in three sub-industries of the cultural industries compared with the main (1-digit level) industry to which they belong. We use data from the Wage Indicator Questionnaire 2001/2002, which includes information on 12,757 employees in the Netherlands. We find that workers in these particular sub-industries of the cultural industries are paid differently compared with their respective main industries. Workers in entertainment and publishing and printing (P&P) are less endowed with standard labour market characteristics. However, whereas workers in entertainment face negative price or evaluation-related effects, the opposite holds for workers in P&P. Workers in IT are more endowed with standard labour market characteristics, but they receive lower rewards for their labour market characteristics.

Keywords Decomposition · Entertainment · IT-services · Netherlands · Printing and publishing · Wage differentials

JEL Classification J24 · J31 · L82 · O12 · Z11

1 Introduction

Most artists are poor and only few of them are among the best-paid professionals (Abbing 2002). Throsby (1994, p.18) finds a considerably lower level of mean and median earnings among artists than among other workers of similar educational and professional standing. Artistic and comparable creative jobs are the core occupations in some sub-industries of the cultural industry as a whole. Earnings in

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core occupations within an industry are correlated with earning levels in the industry. Osburn (2000), for example, points to the fact that the occupations most strongly affected by factors resulting in wage differentials across industries are those that have duties and tasks which are the most closely involved in the primary activities of the firm. What do the low earnings of artists, therefore, teach us about the earnings in the cultural industries? In this study, we will examine wage levels in sub-industries of the cultural industries (e.g. IT) rather than in specific cultural occupations (e.g. computer games designers). Thus, we will not analyse the incomes of the self-employed or freelancers, typical conditions for artists, because we would then have to analyse prices and their determinants, such as the characteristics of the artists' products (see e.g. Rengers and Velthuis 2002). Instead, like Osburn (2000), we turn to the commonly used analyses of wages of individuals in wage employment.

In seeking answers to the question of whether workers in the cultural industries are paid better or worse than other workers, this article investigates wage levels in three sub-industries of the cultural sector (which is not yet defined as an industry in the official coding of the Dutch Statistical Office) and compares them with the wages paid in the main 1-digit industry to which each sub-industry belongs. In Sect. 2, the theoretical explanations for wage differentials across industries and for wages in the cultural industries in particular are examined. Furthermore, we define what is meant by the term cultural industries, identify these industries and make our hypotheses. Section 3 explains the models used to estimate earnings equations and a decomposition technique for the identification of wage gaps. Section 4 describes the data used and the cultural industries in our data set. Section 5 presents the results of wage regressions by the sub-industries of cultural industries and their respective main industry. Section 6 shows the wage differences between the three sub-industries of cultural industries, compared with their respective main industries, and discusses what part of these wage differences is explained by differences in workers' characteristics and what part remains unexplained. Finally, Sect. 7 draws a number of conclusions.

2 Explaining wage differentials across industries

In exploring the question of why workers in the cultural industries may be paid differently from other workers in paid employment, several theories and empirical findings are at our disposal. One strand of the literature is based on investigations of inter-industry wage differentials with no particular reference to cultural industries. A second strand of the literature is based on investigations of wages in cultural industries, mostly without detailed comparisons with wages in other industries.

2.1 A short review of earlier studies

Considerable evidence exists for a wide dispersion in wages across industries. Inter-industry wages' differentials appear to be highly persistent over time, and the tendency to converge is extremely weak (Krueger and Summers 1988). Moreover,

high-paying industries are the same across various countries. The reasons for why some industries pay higher wages break down into: (1) the shirking model, which indicates that high wages will be paid because monitoring is difficult or costly, particularly in large establishments; (2) the turnover model, which indicates that high wages are used to reduce turnover, particularly when training costs are high; (3) the selection model, which indicates that high wages are used to attract a better quality workforce; and (4) the sociological model, which indicates that high wages are used to improve worker morale (Fields and Wolff 1995). Other explanatory models that predict that firms find it profitable to pay above market wages refer to either standard competitive labour market theories, pointing to capital intensity, concentration, geographical characteristics, and rent sharing, whereby the remaining variation is generally thought to be caused by compensating wage differentials, or they refer to the non-competitive approach, whereby it is assumed that efficiency wages explain the inter-industry wage variation (Blackburn 1995) taking into account human capital variables, based on a large strand of the literature and empirical findings. The literature on inter-industry wage differentials has also reflected on the question of whether all measured wage differentials are true, or whether part of these differentials simply reflects unmeasured differences in workers' productive abilities (Gibbons and Katz 1992). As Gibbons and Katz (1992, p. 530) conclude: "We know of no model that fits all facts. … Perhaps no single theory can provide a complete explanation of inter-industry wage differences because different theories are of the greatest importance in different sectors of the labor market." Bartel and Sicherman (1999), who use an inter-industry analysis to explain the wage premium and the education premium associated with technological change, find that the wage premium is primarily caused by the sorting of more able workers into industries associated with technological change, whereas the education premium is the result of the greater demand for the innate ability or other observed characteristics of more educated workers. However, the extensive literature on inter-industry wage differentials does not specifically address or analyse the inter-industry wage differentials in the cultural industries. Our aim is to fill this gap.

The second strand of the literature relevant for our investigation covers the cultural industries only, focusing on the performing, visual, and literary arts. Throsby (1994) reviews the major findings regarding artists' earnings. Using US census data, a considerably lower level of mean and median earnings is revealed for the occupational groups in which artists are classified, compared with other workers of similar educational and professional standing (Thorsby 1994, p. 18). Artists suffer a significant earnings penalty, which is partly because they have lower hourly earnings and partly because artists spend less time on their work than other workers do in their occupations. Moreover, age-earnings profiles are steeper for artists than for other workers. Education, which is a major human capital variable in explaining wages, appears not to be as influential for artists as it is for other occupations: the schooling variable turns up with lower and less significant coefficients for artists than for other occupations. Finally, the exploration of artists' incomes shows that they are more variable over time and for different types of artist. In order to earn a decent income, moonlighting is common among artists. Blaug's (2001) review of developments in the economics of the performing, visual, and literary arts over the

last 30 years, shows that only an older study by Filer (1986), which used a less rich and less individual data set compared with studies in the 1990s, found that the human capital theory (Becker 1962; Mincer 1974) works for artists as well as for other workers. All other studies do not find an effect of education of the kind expected from human capital theory. Another strand of the literature on the cultural professions follows the seminal work by Rosen (1981) on the economics of superstars. Rosen drew attention to the size of the market and the proportion of it that is controlled by a single person. Indeed, in certain kinds of economic activity, there is a concentration of output among a few individuals, which is also shown in the distribution of income, and in very large rewards at the top. In this article, we focus on workers in wage employment in sub-industries of the cultural industry; we do not aim to analyse the distribution of earnings and the impact of superstars in certain specific markets of the cultural industries.

2.2 Identifying the cultural industries

It is generally agreed that the term cultural industries applies to those industries that combine the creation, production and commercialization of 'content', which is intangible and cultural in nature. Content is typically protected by copyright. Depending on the context, cultural industries may also be referred to as 'creative industries', 'sunrise' or 'future-oriented industries' in economic jargon, or 'content industries' in technological jargon. The notion of the cultural industries generally includes printing, publishing, and multimedia, audio-visual, phonographic and cinematographic productions, as well as crafts and design. For some countries, this concept also embraces architecture, visual and performing arts, sports, manufacturing of musical instruments, advertising, and cultural tourism.[1] However, some dispute remains as to the definition of the cultural industries (Pagniet 2002). A major reason for this dispute lies in the fact that the cultural industries are dynamic, with both horizontal integration as new players enter from telecommunications and computer industries, and vertical integration, with media firms getting involved in all areas of media content production and distribution (Ducatel et al. 2000). It is expected that increasingly large international conglomerates will unite businesses from almost every sub-industry of the cultural industries, and that the arrival of the Internet and digitalized information will have a far-reaching influence on the future of the cultural industries (Rutten 1999).

These definitions of the cultural industries are not easily identified in officially accepted industry coding systems, such as those that are employed by national or international statistical offices. To identify the cultural industries, we have chosen a

[1] This definition spread by UNESCO (see www.unesco.org) is based on the notion that cultural industries add value to contents and generate values for individuals and societies. They are knowledge and labour-intensive, create employment and wealth, nurture creativity—the "raw material" they are made from—, and foster innovation in production and commercialization processes. At the same time, cultural industries are central in promoting and maintaining cultural diversity and in ensuring democratic access to culture. This twofold nature—both cultural and economic—builds up a distinctive profile for cultural industries.

broad range of sub-industries using a coding method based on the Standard Industry Coding (SBI-1993) of Statistics Netherlands (CBS 1993). At the 3-digit level of classification, we defined three sub-industries within the cultural industries: namely, (1) printing and publishing: (2) IT-services: we defined these in order to capture IT-firms that fuse into cultural markets, and cultural firms that employ IT extensively and therefore may be now coded as IT-services firms, and (3) the entertainment industry, including advertising. To facilitate the understanding of a worldwide readership, we also used the corresponding codes of the General Industrial Classification of Economic Activities within the European Communities, abbreviated to NACE-Rev.1. Table 1 presents the NACE-codes and their equivalent SBI-codes.[2]

At the 3-digit level of classification, the printing and publishing industry consists of two branches: the printing industry and the publishing industry (NACE codes 473 and 474). The IT services and the Internet firms cannot be identified as separate branches of industry in the NACE-Rev-classification, most probably because this classification lags behind the recent and fast developments in the IT industry. The corresponding NACE-code 839.2 includes all kinds of IT-related services. At the 3-digit level of classification, the entertainment industry breaks down into five branches of the industry, which include: cinemas; radio and television services; entertainment; liberal, artistic and literary professions and libraries; we also included advertising, because this branch increasingly includes artistic professionals. The corresponding NACE-codes are 973–977, and 838.

With a view to testing the assumption of wage differentials, each of the three sub-industries of the cultural industries under study is compared with the remaining branches at its one-digit classification (Table 2). Thus, the printing and publishing industry is compared with other branches in the manufacturing industry, including agriculture, construction and transport. The IT-services and Internet firms are compared with the trades and commercial services. The entertainment industry is compared with the non-commercial services and the public sector. In this analysis, we will keep constant some major inter-industry differences irrelevant to our research objective, such as public versus private industries.

2.3 Expectations

We expect the wages of workers in publishing and printing (P&P) not to be different from the wages of other workers in the main industry, since the shirking model, the turnover model, the selection model, and technological change and human capital investments do not lead to the expectation of high wage differentials. In addition, we expect the workers in IT-services to earn higher wages than other workers in trades and commercial services. IT, as a relatively new field, requires not only investments in schooling and training (turnover model) but also creativity (selection

[2] Kloosterman (2002) works with a basic and a broader definition of cultural industries applying SBI-coding. The basic definition includes similar codes as presented in Table 1 except the 925 and the IT sector. The broader definition by Kloosterman (2002) is similar to Scott (2000), which includes all trade and production of products such as shoes and clothing factories, publishers, and furniture industries, but does also not include SBI-codes 720, and 721.

Table 1 Identifying three sub-industries of the cultural industries

NACE-Rev-1 coding[a]	SBI-1993 coding[b]
Printing and publishing	
473, 474 Printing and publishing	220
473 Printing industry, gravure printing, letterpress, bookbinding, including sewing and gilding, industries allied to the printing industry	222
474 Publishing of books, pictures, music, newspapers and periodicals, other publishing	221
IT-services and internet firms	
839.2 Computer services and services provided by means of office machines (duplicating, document copying, etc.) to third parties on a fee or contract basis	720 + 721
Entertainment industry	
973 Cinemas	921
974 Radio and television services	922
975 Entertainment (except cinemas and sport)	925
976 Liberal, artistic and literary professions	923 + 924
977 Libraries, public archives, museums, botanical and zoological gardens	925
838 Advertising	744

[a] Codes and names in the NACE Rev-1 coding from Eurostat

[b] SBI-1993 coding from statistics Netherlands

Table 2 The three sub-industries of the cultural industries, the main industries to which they belong, and the abbreviations used in this study

Sub-industry (3-digit)	Abbreviated to	Main industry (1-digit)	Abbreviated to
Printing and publishing	P&P	Agriculture, manufacturing, construction and transport	Manufacturing
IT-services and internet firms	IT-services	Trades and commercial services	Commercial services
Entertainment industry	Entertainment	Non-commercial services and the public sector	Non-commercial services

model). Moreover, most industries, including the entertainment industry, are in need of IT workers, because the arrival of the Internet and digitalized information has created one distribution medium for different cultural product categories and for different industries (Rutten 1999). Furthermore, a new category of workers, digital information managers, has grown. They receive products from content producers, and earn their income by exploiting access to consumers. This latter category of workers may be closely related to either computer software engineers or traditional content providers, such as, for example, providers of music, film, and novels that innovate and employ the new IT-technologies. In the Netherlands, IT-firms have emerged near technical universities in the Provinces of North-Brabant (Technical University Eindhoven) and South Holland (Technical University Delft).

From Sect. 2.1, it follows that workers in the performing, visual and literary arts probably earn lower wages than other workers in non-commercial services and the public sector. However, some firms in entertainment have become large (i.e. those in television and theatre production) which is expected to have a positive effect on wages if the monitoring costs theory (shirking model) applies. In addition, working in the Province of North-Holland (which has TV studios in Hilversum and a high concentration of film, advertisement and media-related industries in Amsterdam), and South-Holland (which has a high concentration of media and entertainment companies, architecture and design businesses in Rotterdam) may lead to higher wages in the cultural industries compared with other non-commercial services. The density of (networks of) firms in the urban context (Kloosterman 2004) may be an indicator for the selection model. On the other hand, most workers in large organizations in non-commercial services and the public sector will probably also earn higher wages, because these include a high proportion of rather well-paid civil servants. These workers are mostly located in The Hague, where the Dutch government is located, which is in the Province of South-Holland.

The inter-industry wage analyses are typically controlled for the standard human capital variables, that is, education, age or years of service, gender, and race. In addition, studies of the gender wage gap reveal that some variables have a different effect on men's and women's wages, particularly when it comes to the association between motherhood and wages. For the Netherlands, Wetzels and Tijdens (2001) found that a career break for the purpose of child rearing had a large impact on Dutch women's wages. Therefore, apart from the human capital variables, we will take an individual's household characteristics and career break into account in our analyses of the wages in the cultural industries. Furthermore, wages may differ by gender even if similar levels of education and years of employment experience are attained. We include interaction variables to control for these possible effects. In addition, we control for job characteristics such as employment contract and working part-time. Following the reasoning of the shirking model, we expect wages to be determined by firm size, and therefore, we include this variable. We also control for region.

3 Empirical model

3.1 Methodology

This article aims to explore wage levels in the cultural industries in comparison with wage levels in the aggregated industries of which each of them is a part. We will estimate wage differences in each sub-industry compared with the 1-digit level industry to which they belong. The analyses follow a two-step methodology. First, we estimate whether wage differences exist between employees in the three cultural sub-industries compared with their respective 1-digit industries, taking into account the explanatory factors derived from Sect. 2. The standard procedure to identify wage differentials is to estimate Mincerian wage functions by OLS. Second, different wage levels are analysed following the literature on decomposing wage

differentials. This literature explains a certain part of the differences in wages by differences in workers' observable labour market qualifications. Furthermore, an unexplainable part of the differences is considered to comprise price or evaluation-related effects. We measure the wage gap by simply including dummies in these wage functions, or, alternatively by decomposing wage differentials by the method developed by Oaxaca (1973).

However, numerous recent econometric studies indicate that non-random sampling can have deleterious effects on the properties of OLS estimations. In the literature, this is referred to as a selectivity problem. The productivity and behaviour of those who are included in this non-randomly selected sample may be different from that of those who are not included in the sample. This may cause a bias with regard to the estimated coefficients of the earnings functions (Heckman 1979). Unfortunately our data set excludes unemployed persons, so we are unable to control for them.

3.2 Estimation of wage equations

We apply a conventional earnings function:

$$\ln W_{ij} = X_{ij}\beta_j + \varepsilon_{ij}, \tag{1}$$

where $\ln W_{ij}$ is the natural logarithm of hourly earnings; X_{ij} are vectors of exogenous regressors determining productivity; and β_j are coefficient vectors of the wage equation. Individuals are indexed by $i = 1,2,\ldots,n$, and industry by $j = 1,2,\ldots,6$; $j = 1$ = P&P; $j = 2$ = Manufacturing, excl. P&P; $j = 3$ = IT Services; $j = 4$ = Commercial Services, excl. IT Services; $j = 5$ = Entertainment Industry; $j = 6$ = Commercial services. The error term ε_{ij} is independently and identically distributed within each main industry j $[\varepsilon_{ij} \approx N(0, \sigma_j)]$. First, wage equations for employees in the selected main industries and sub-industries are estimated. Second, wage differentials between workers in the selected sub-industries and main industries will be decomposed into productivity differentials and price or evaluation-related effects (Blinder 1973; Oaxaca 1973).

3.3 Calculation of wage differentials via decomposition

In essence, the Blinder decomposition of wage differentials takes the average endowment differences between the two groups (the wages of the workers in the sub-industry and the wages of workers in their respective main industry) and weights them by the estimated coefficients of the high-wage workers, while the differences in the estimated coefficients are weighted by the average characteristics of the low-wage workers. The decomposition is explained as follows.

Let y_1 and y_2 be the means of the dependent variable Y ($Y = \ln W_{ij}$), x_1 and x_2 the row vectors of the means of the explanatory variables $X_1,\ldots,X_k$, and b_1 and b_2 the column vectors of the coefficient for group 1 (high) and group 2 (low). Group 1 (high) are wages in the sub-industries. Group 2 (low) are wages in the respective

main industries. For each pair of sub-industry and main industry, the raw differential $y_1 - y_2$ may then be expressed as:

$$R = y_1 - y_2 = (x_1 - x_2)b_2 + x_2(b_1 - b_2) + (x_1 - x_2)(b_1 - b_2) = E + C + CE. \tag{2}$$

(Daymont and Andrisani 1984), i.e. R is decomposed into: a part due to differences in endowments (E) or characteristics; a part due to differences in coefficients (including the intercept) (C) and attributed to price or evaluation related-effects; and a part due to interaction between coefficients and endowments (CE). Depending on the model, which is assumed to be non-discriminating, these terms may be used to determine the unexplained (U: discrimination) and the explained (V) part of the differential, the question is how to allocate the interaction term CE. Oaxaca (1973) proposed assuming either the low group model or the high group model as non-discriminating, which leads to $U = C + CE$ and $V = E$ or $U = C$ and $V = E + CE$, respectively. More generally, the decomposition may be written as:

$$y_1 - y_2 = (x_1 - x_2)[D * b_1 + (I - D) * b_2] + [x_1 * (I - D) + x_2 * D](b_1 - b_2). \tag{3}$$

where I is an identity matrix and D is a diagonal matrix of weights. In our analysis, D is a null matrix or equals I ($D = I$ is also what Blinder 1973, suggested).

The Oaxaca technique was initially developed for analysing price or evaluation-related effects using cross-section data. Since then, it has also been applied to panel data. However, it does not take into account the effects of changes in the overall wage distribution on the wage gap. Altonji and Blank (1999) extensively discuss the (dis)advantages of different approaches that measure price or evaluation-related effects. Since we use cross-sectional data, we will not further discuss the dynamic aspects of wage differentials here.

4 Data, measurement, and descriptive statistics

4.1 The data from the Wage Indicator Questionnaire 2001/2002

For the empirical research, we used data from the Wage Indicator Questionnaire (WIQ) 2001/2002 (WIQ-2001/2002), which is part of the Wage Indicator Website (www.loonwijzer.nl) (see Tijdens et al. 2002; Tijdens 2004). The website represents the cooperation of the largest Dutch trade union confederation FNV, the largest Dutch career site Monsterboard, the University of Amsterdam and the Amsterdams Instituut voor Arbeidsstudies (AIAS). The website attracts over a hundred thousand visitors and has more than a million page views monthly. Particularly, its Salary Check appears to be a great crowd magnet, as it provides reliable information about average wages earned in 130 occupations, controlled for characteristics such as education and years of service. In order to generate up-to-date information on wages earned, the web visitors are asked to complete a questionnaire. Approximately one out of every hundred visitors does so. Initially, the website and the questionnaire

addressed women only, but since May 2001, it has aimed at attracting both genders. The data set used in this study covers the data collected from mid-May 2001 until mid-April 2002.

To ascertain how representative the data set was, the distribution across gender and age was compared with data from the Statline database 2000, primarily based on the Labour Force Survey (LFS-2000) and collected by Statistics Netherlands. Because the questionnaire was initially aimed at women only, women were overrepresented in the data set. In addition, both men and women aged 25–34 were overrepresented, whereas men and women aged 45–54 were underrepresented. Because of the magnitude of the deviations, we weighted the sample for gender and age. The weighted sample does not show any significant deviations between the WIQ-2001/02 and the LFS-2000 according to industries (see Table 3).

The initial data set used has 16,269 person observations. We excluded the few self-employed and freelancers, and the observations with missing values for industry, firm size, region, presence of children, and career break. To avoid our wage estimations being affected by outliers, we excluded the observations with 1% of the lowest and 1% of the highest wage distribution. From the sample with information on education level, we kept all observations except for those indicating the education level as "something else". As a result, we worked with 12,757 observations.

4.2 The variables used in the equations

The data set is useful for our analysis, because it has detailed information on wages, hours, firm characteristics, industry, employment history, household characteristics,

Table 3 Comparison of WIQ 2001/02 (N = 16,269) and the LFS data 2000: employees by gender and age, and by gender and industry

Age	Employees in WIQ-2001/2002		Employees in LFS-2000		Differences in %-points	
	Women	Men	Women	Men	Women	Men
15–24	17.8%	13.7%	14.9%	11.8%	2.9%	1.8%
25–34	47.4%	45.1%	32.6%	28.4%	14.8%	16.7%
35–44	23.2%	26.3%	27.6%	28.2%	−4.4%	−2.0%
45–54	10.4%	12.5%	20.0%	23.4%	−9.6%	−10.9%
55–64	1.3%	2.4%	4.9%	8.1%	−3.6%	−5.7%
Total (%)	100%	100%	100%	100%	0%	0%
Total N	8895	7374	2.487.000	3.629.000	–	–
Industry	Weighted	Weighted				
Manufacturing	7.6%	23.3%	4.6%	21.3%	−3.1%	−2.1%
Commercial services	19.5%	25.8%	16.0%	24.7%	−3.5%	−1.1%
Non-commercial services	13.4%	10.3%	19.9%	13.4%	6.6%	3.2%
Total (%)	40.6%	59.4%	40.6%	59.4%	0%	0%
Total N	6530	9567	2.414.000	3.539.000	–	–

Source: WIQ 2001/02 and CBS-Statline 2000

and the usual human capital characteristics. The dependent variable in the earnings equation of the labour force in wage employment is the natural log of the hourly wage in Euros from the current job, excluding overtime pay, shift premium, bonuses, commission, or allowances, but including the 8% holiday premium when such a premium is reported. The hourly rates are based on the contractual hours worked per week, the payment, and the period covered by the payment, which is usually one month, but could be 4 weeks, 1 week, 1 hour or even 1 year. If the reported contractual weekly hours are zero or close to zero, the actual weekly working hours were used for calculating the hourly wages.

The explanatory variables have been derived from Sect. 2. Education is measured in years from age 12. Experience is measured as total years worked in paid employment, thus excluding the years due to a career break longer than one year. To control for the non-linear effect of experience, we also use experience squared. In addition, we use tenure, indicating the years worked with the current employer. Furthermore, we control for the gender effect holding education and experience constant. Two variables characterize the respondent's job: a part-time job, and a permanent contract. Two household-related variables indicate whether the respondent has one or more children living at home, and whether there has been a career break due to children. Moreover, we include gender and ethnicity, as is common in inter-industry wage differentials. Two dummy variables indicate ethnicity: one indicating that the person was born outside the Netherlands but in Europe, the other indicating that the person was born outside Europe. In addition, in studies of industry wage effects, geographical differentials persist. We therefore take into account four provinces in the Netherlands, together representing approximately half of the labour force in the country, leaving the remaining provinces as the reference group. Finally, firm size is included in the analyses, including two categories of small firms: firms that have 10 employees and firms with 10–100 employees, leaving the category of large firms with 100 employees and over as the reference group.

4.3 Description of the data

Table 4 shows the mean values of the variables used in the analyses. Average wage rates are highest in the 1-digit non-commercial services, followed by the 3-digit IT-services. Wages are lowest in the 1-digit commercial services and in 3-digit entertainment. This seems in line with the results of Throsby (1994). The wage differentials between the 3-digit printing and publishing and its 1-digit manufacturing are small, while the differences between the 3-digit IT-services and its 1-digit commercial services are large, in favour of the former; and the differences between the 3-digit entertainment sub-industry and its 1-digit non-commercial services are large as well, in favour of the latter.

Table 4 also shows that education levels vary substantially across all three pairs of industries, but that, at first sight, no clear pattern exists between levels of education and wage rates. The preliminary inspection of the data shows both relatively low wages in the entertainment industry and relatively low education levels. Education is the highest in the 3-digit IT-services. Tenure increases with actual experience and varies substantially across the industries. As could be

Table 4 Mean values of the logarithm of the gross hourly wage and all explanatory variables by industry

	All	Publishing and printing	Manufacturing excl. P&P	IT-services	Commercial services, excl. IT	Entertainment	Non-commercial services, excl. entert.
Log gross hourly wage in euros	2.56	2.55	2.54	2.61	2.51	2.52	2.66
Education (years)	12.24	11.73	11.69	13.19	12.24	12.22	12.81
Experience (years)	11.80	11.93	13.43	9.46	10.31	9.46	13.61
Experience squared (years)	219.86	218.98	271.48	143.97	173.09	153.60	276.62
Tenure (years)	5.18	5.32	6.81	3.23	4.02	3.41	6.22
Education*gender	5.56	5.27	7.35	6.16	5.54	3.74	3.82
Experience *gender	5.96	6.70	9.29	4.66	4.95	3.56	4.79
Experience squared*gender	123.15	130.07	201.87	75.29	91.97	60.43	113.85
Gender (0 = female, 1 = male)	0.45	0.46	0.63	0.46	0.44	0.32	0.29
Permanent contract [0,1]	0.93	0.94	0.95	0.97	0.92	0.84	0.92
Part-time job [0,1]	0.24	0.17	0.13	0.17	0.23	0.30	0.40
Re-entrant [0,1]	0.24	0.20	0.21	0.20	0.23	0.24	0.29
Child [0,1]	0.38	0.36	0.43	0.35	0.32	0.27	0.47
Ethnic (non-Dutch Europe) [0,1]	0.03	0.04	0.03	0.06	0.03	0.04	0.03
Ethnic (non-Dutch non-Europe) [0,1]	0.06	0.05	0.05	0.09	0.06	0.03	0.05
Province North-Holland [0,1]	0.21	0.33	0.15	0.27	0.23	0.42	0.18
Province South-Holland [0,1]	0.22	0.14	0.20	0.21	0.22	0.19	0.25
Province Zeeland [0,1]	0.02	0.01	0.03	0.01	0.02	0.04	0.02
Province North-Brabant [0,1]	0.14	0.13	0.19	0.13	0.13	0.12	0.12
Employed in firm $\leq$10 employees [0,1]	0.14	0.17	0.12	0.08	0.18	0.23	0.09
Employed in firm >10 and $\leq$100 employees [0,1]	0.42	0.49	0.46	0.46	0.44	0.51	0.32
N	12,757	404	2996	236	6130	158	2833

Source: WIQ 2001/02, weighted data

Note: All dichotomous variables are coded 0 = no, and 1 = yes

expected, it is lowest in the 3-digit IT-services, and highest in the 1-digit manufacturing and non-commercial services. The lower tenure and actual experience in the cultural industries in general, compared with the main industries, characterize these sub-industries as younger than the main industries.

The share of permanent jobs is the largest in IT services and the lowest in entertainment. The share of part-time jobs appears to be related to the share of women, with the non-commercial services ranking highest and manufacturing ranking lowest. As regards the presence of children, the large difference between the entertainment industry and the non-commercial services is remarkable. In the former, the percentage of employees with children is lowest at 27%, while in the latter it is highest at 47%. The share of women in the industry varies substantially across the mean. The non-commercial services rank highest with 71% female workers and manufacturing ranks lowest with 27% females. The percentage of non-Dutch, both European and non-European, is highest in the IT services, whereas in the other industries it does not vary much across the mean, except for a lower percentage of persons with a non-European background in the entertainment industry.

The mean values for the four provinces reveal a large variation across the industries. The share of the respondents in the entertainment industry working in the Province of North-Holland is large, which is in line with statistics presented elsewhere (Raspe and Segeren 2004; Kloosterman 2004), whereas the workers in the non-commercial services are predominantly found in the Province of South-Holland, and the workers in manufacturing are overrepresented in the Province of North-Brabant. Finally, firm size varies substantially across the mean, with high shares of workers in the entertainment industry predominantly employed in smaller firms, and rarely in firms with more than 100 employees. Both IT-services and non-commercial services show relatively low shares of employees in small firms.

5 Results: Earnings functions by industries

The estimation results are shown in Table 5.[3] All earning functions include human capital, the interaction of gender and human capital, job characteristics, children,

[3] We estimated wage equations for all workers with interaction dummies for all regressors with the cultural industries that we distinguish. Furthermore, we compared the results when we include interaction with the constant and without interaction with the constant. Including the interaction between P&P and the constant makes the effect of education negative in P&P compared to other workers and makes the constant for P&P significantly and highly positive. In entertainment, the opposite is found. Including the dummy for the constant in entertainment makes the effect of education insignificant in entertainment. All other effects are similar between the two estimations. Compared to all workers' wages, workers in (a) P&P earn higher wages if they are male but not if controlled for education level, and if they work in Zuid-Holland, in (b) earn higher wages if they working in Noord-Holland, and (c) in entertainment if they work for small firms, have children, and if they are female with similar levels of experience. Moreover, we estimated similar regressions but then for the distinguished main industries with interaction dummies for sub-industries. Again we include the constant in the first estimation per industry, and leave the constant for sub-industry out in the second estimation. Holding main industry features constant, we find no effect of different wages for workers in IT, we find negative effects on wages for workers in P&P compared with other manufacturing industries as regards being born outside Europe and being a re-entrant. For workers in entertainment compared to non-commercial services, we find an additional positive effect from working in Noord-Holland. The estimations are available upon request from the author.

Table 5 Coefficients and (*t*-values) of the OLS wage regressions by industry

	P&P	M excl. P&P	IT	CS excl. IT	Entertainment	Non-CS excl. entertain.
Education (years)	0.058 (0.008)**	0.083 (0.004)**	0.073 (0.012)**	0.091 (0.003)**	0.071 (0.013)**	0.081 (0.003)**
Education*gender	−0.010 (0.011)	−0.011 (0.005)*	−0.016 (0.018)	−0.008 (0.004)*	−0.016 (0.021)	−0.013 (0.005)**
Experience (years)	0.024 (0.006)**	0.029 (0.003)**	0.034 (0.012)**	0.035 (0.002)**	0.040 (0.011)**	0.027 (0.002)**
Experience*gender	0.013 (0.008)	0.005 (0.004)	0.018 (0.016)	0.003 (0.003)	−0.025 (0.019)	0.003 (0.004)
Experience squared*gender	0.000 (0.000)	0.000 (0.000)	−0.001 (0.001)	0.000 (0.000)	0.001 (0.001)	0.000 (0.000)
Experience squared (years)	0.000 (0.000)*	−0.001 (0.000)**	−0.001 (0.000)	−0.001 (0.000)**	−0.001 (0.000)*	0.000 (0.000)**
Tenure	0.002 (0.002)	0.002 (0.001)	0.007 (0.006)	0.004 (0.001)**	−0.001 (0.005)	0.001 (0.001)
Tenure (years)	0.088 (0.048)	0.088 (0.023)**	0.033 (0.107)	0.009 (0.014)	0.172 (0.062)**	0.069 (0.018)**
Permanent contract [0,1]	0.088 (0.048)	0.088 (0.023)**	0.033 (0.107)	0.009 (0.014)	0.172 (0.062)**	0.069 (0.018)**
Part-time [0,1]	−0.028 (0.034)	−0.015 (0.017)	−0.022 (0.053)	−0.035 (0.010)**	0.026 (0.053)	0.005 (0.011)
Ethnicity non-Dutch Europe	0.014 (0.047)	0.081 (0.022)**	0.051 (0.065)	0.007 (0.016)	−0.017 (0.106)	0.037 (0.021)
Ethnicity non-Dutch non-Europe	−0.120 (0.071)	−0.029 (0.032)	−0.019 (0.088)	0.009 (0.021)	0.292 (0.144)*	−0.044 (0.030)
Gender (0 = female, 1 = male)	0.048 (0.149)	0.120 (0.066)	0.126 (0.255)	0.137 (0.049)**	0.460 (0.292)	0.222 (0.068)**
Child [0,1]	0.059 (0.029)*	0.033 (0.012)**	0.002 (0.050)	0.051 (0.010)**	0.103 (0.061)	0.037 (0.012)**
Re-entrant [0,1]	−0.066 (0.030)*	−0.041 (0.013)**	−0.096 (0.049)	−0.035 (0.010)**	0.037 (0.056)	−0.047 (0.012)**
Province North-Holland	0.052 (0.027)	0.023 (0.015)	0.101 (0.047)*	0.070 (0.010)**	0.083 (0.058)	0.013 (0.013)
Province South-Holland	0.053 (0.035)	0.010 (0.013)	0.039 (0.052)	0.009 (0.010)	−0.031 (0.067)	0.034 (0.012)**
Province Zeeland	0.024 (0.120)	−0.031 (0.030)	0.085 (0.172)	−0.018 (0.030)	−0.046 (0.119)	−0.041 (0.033)
Province North-Brabant	0.038 (0.037)	0.000 (0.014)	0.024 (0.064)	−0.025 (0.012)*	−0.065 (0.077)	0.002 (0.016)
Employed in firm ≤10 employees [0,1]	−0.185 (0.034)**	−0.147 (0.017)**	−0.131 (0.077)	−0.127 (0.011)**	0.038 (0.066)	−0.135 (0.017)**
Employed in firm ≤100 and >10 employees [0,1]	−0.104 (0.026)**	−0.076 (0.011)**	−0.081 (0.041)	−0.073 (0.009)**	−0.072 (0.054)	−0.051 (0.011)**

Table 5 continued

	P&P	M excl. P&P	IT	CS excl. IT	Entertainment	Non-CS excl. entertain.
Constant	1.613 (0.114)**	1.234 (0.058)**	1.381 (0.193)**	1.152 (0.037)**	1.163 (0.193)**	1.297 (0.039)**
N	404	2996	236	6130	158	2833
R^2	0.46	0.42	0.42	0.43	0.50	0.49

Source: Wage Indicator Survey 2001/02

Key: P&P, publishing and printing; M, manufacturing industry; CS, commercial services; IT, IT services; Entertain, entertainment industry; excl., excluding. Means of variables are in Table 5. Description of variables in Sect. 4

being a re-entrant in the labour market, firm size, and region. As expected, many explanatory variables are significant. Education and experience have a positive effect on the hourly wage of employees from all groups, as expected, although the extent and the significance level of the coefficients vary along the samples. Education is rewarded the most in commercial services, and experience in entertainment. The lowest reward for education and for an additional year of experience is found for workers in P&P. Tenure does not affect hourly wage significantly, except for the workers in the commercial services industry where it has a significantly positive effect. Furthermore, we find that men are paid less than women for similar education in non-commercial services, and slightly less in the manufacturing industry and commercial services. We do not find a gender difference in rewards for each additional year of experience in any of the industries. The highest reward from a permanent contract is found in the entertainment industry. However, in the manufacturing industry and in non-commercial services having a permanent contract also affects wages significantly positively. Having a part-time job only has a significant effect on the wages of workers in commercial services, and there the effect is negative. Having a non-European background pays off compared with the majority of the Dutch employees in the entertainment industry, and having a non-Dutch European background pays off in the manufacturing industry compared with employees with another ethnic background. We found that an ethnic background has no significant effect on wages in the other industries.

Furthermore, we estimate the effect that being a re-entrant has on wages. A re-entrant is defined as returning to work after a break of at least one year. To have had a career break makes employees in all industries significantly worse off. The penalty due to a career break is the worst in the sub-industry of P&P compared with the workers in manufacturing, but it is also significant in commercial and non-commercial services. Accounting for gender, part-time job and being a re-entrant, the effect of children is significantly positive in all industries, except for the IT-services industries and entertainment where no significant effect is found. Furthermore, workers in commercial services excluding IT, and in the IT-sub-industry in the province of North-Holland, are significantly better paid than their colleagues in other regions in the Netherlands. Workers in the non-commercial

Table 6 Summary of decomposition results

	Publishing & printing versus manufacturing, excl. P&P	IT services versus commercial services, excl. IT	Entertainment versus non-commercial services, excl. entertainment
Raw differential ($E + C + CE$)	0.008	0.096	−14.09
– Due to characteristics (E)	−0.033	0.091	−14.10
– Due to price or evaluation related effects (C)	0.043	0.025	−0.006
– Due to interaction (CE)	−0.002	−0.02	0.008

Source: Wage Indicator Survey 2001/02

services in South-Holland are paid better than their colleagues in other regions in the Netherlands. Workers in commercial services are paid less in North-Brabant. Workers in small firms, both firms with 10 employees or less and firms with more than 10 but less than 100 or exactly 100 employees, are paid less than workers in establishments with more than 100 employees in all industries, except in the entertainment industry and in IT-services in where we do not find a significant effect of firm size on wages. These negative effects on payment are very strong; they are strongest for workers in firms with up to 10 employees and for workers in P&P. These findings seem to support the hypothesis of the shirking model, concerning the higher monitoring costs of large firms.

6 Results: Analysis of wage differentials

The decomposition results of wage differentials are obtained by Eq. 3, using estimated coefficients and mean values of the explanatory variables presented in Table 5. Table 6 summarizes the results of the decomposition of the wage differentials between employees in the sub-industry and its main industry, within the selected industries. We use the STATA 8.2 command on decomposing wage differentials. The raw differential consists of the endowments (E) component of the decomposition, and the coefficients (C) component, and the interaction between C and E. The results are very different for the three comparisons we make. Table 6 shows that the raw differential between the cultural sub-industry and the main industry is only positive in IT services versus commercial services, as expected from the turnover model and the selection model, and to a small extent in P&P versus manufacturing, also as expected. However, it is negative for entertainment versus non-commercial services. Only workers in the IT industry have more endowments compared with their respective main industry. The negative raw differential for entertainment compared with the main industry relates to workers having less endowments in entertainment. However, being paid less for endowments is only a minor reason for the lower payments of workers in cultural industries versus non-commercial services. This leads us to reject all expectations, as described in Sect. 2.3, as explanations of workers' wages in entertainment. However, our results are in line with the findings in Throsby (1994).

7 Conclusions

The examination of wage levels in the cultural industries, rather than in specific cultural occupations, has led to a close examination of the definitions of workers in the cultural industries. In our study cultural industries comprised P&P, IT services and Internet firms, and entertainment. Identification was based on internationally defined coding by Eurostat and Statistics Netherlands.

Explanations of why employers pay higher wages in the cultural industries are thought to be related to the innovative character of these industries. In particular, the technology-driven innovation of products and services may lead to employers

paying higher wages to workers, because of the above average abilities that are required to perform well in such creative jobs in a dynamic market. However, in our analysis of wages in the three sub-industries of the cultural industries and the main one-digit industry to which each belongs, the question "Are workers in the cultural industries paid better or worse?" leads to different answers.

Our preliminary inspection of the data of the three pairs of selected industries does indeed show that workers in sub-industries are characterized by less tenure, less actual experience in years, and slightly higher education (except for entertainment) compared with the main industries to which they belong. All these facts characterize these sub-industries as younger than the main industries. Workers in the entertainment industry are less covered by permanent contracts than in any other industry, and they are much more often employed part-time (as in the main non-commercial services), in small establishments, and about 40% of these workers are employed in the Province of North-Holland. Workers in P&P are also mostly employed in North-Holland. These characteristics make these workers very different from other workers. However, the pay differentials between the sub-industry and the main industry is negative only in the entertainment industries.

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